

into a beaker. The acetic acid solution is filtered off into a weighed platinum basin evaporated to dryness, heated and weighed as Mn_2O_4 .—J. B. C.

Apparatus for Fractional Distillation. F. Anderlini. Chem. Zeit. 9, 941.

THIS apparatus consists of a worm of five or more convolutions, according to the number of which, four or more upright tubes corresponding with the connecting tubes in Bel and Heninger's apparatus, connect each coil of the worm with that next but one below it. The diameter of the connecting tubes is somewhat contracted at the bend which they take before entering the lower coil. These connecting or draining tubes serve to prevent an accumulation of liquid in the worm, and thus obviate any risk of a quantity of liquid being ejected into the condenser, should a sudden evolution of vapour take place.—W. D. B.

Examination of the Ash of Vulcanised Caoutchouc. C. Reinhardt. Stahl und Eisen, 1884, p. 649.

FOR the estimation of the ash in vulcanised caoutchouc, from 0.5 to 1 grm. of the sample is cautiously heated in a covered crucible until the evolution of gas has ceased, and then in the open crucible until the organic matters are burnt off. The stronger the heating the less accurate are the results, since calcium carbonate loses CO_2 . Gypsum is converted into calcium sulphide, and oxide of zinc transformed into sulphide or reduced and the metal volatilised. For the accurate estimation of the mineral constituents, sulphur excepted, from 0.5 to 1 grm. of the caoutchouc in shavings is warmed in a beaker upon the water-bath with nitric acid of 1.4 sp. gr., until solution is effected. After cooling somewhat the solution is transferred to a porcelain basin, evaporated upon the water-bath to dryness, moistened with hydrochloric acid, and dissolved in water. Silicic acid and barium sulphate remain undissolved. The solution contains oxide of zinc, lime, magnesia, ferric oxide, and alumina, which are separated in the usual manner. The total sulphur is estimated by warming about 1 grm. of the sample with 20 cc. of nitric acid, potassium chlorate being thrown in from time to time. The solution is evaporated, dissolved in hydrochloric acid and water, filtered, and the sulphuric acid estimated in the filtrate and also in the barium sulphate, forming a part of the insoluble residue. The sulphur added to effect the vulcanisation is estimated by burning a portion in a current of oxygen at a low temperature and passing the gases of combustion into hydrochloric acid containing bromine; or the caoutchouc may be heated in a glass tube closed by fusion, and the sulphur estimated in the distillate.

—W. D. B.

Estimation of Fat in Palm-nut Meal and other Palm-nut Preparations. V. v. Wilan. Bied. Centr. 14, 140-141.

WHEN treating palm-nut meal in the ordinary way for fat determination in Soxhlet's apparatus for the usual time, 3 to 4 hours, low results are obtained, owing to the dense nature of the cake, and a subsequent extraction for from 5 to 6 hours yield another 1 per cent. of fat. Other feeding materials yield up their fat to within a very minute quantity during the four hours' extraction. This peculiarity of palm-nut preparations is attributed to the mechanical retention of fat which is closely pent up in the cells; and can, therefore, only be attacked by the ether with great difficulty, and only after some time comes into solution. The results of experiments with this material ground to different degrees of fineness confirm this view, for coarse samples retained considerable quantities of fat, whereas finely-pulverised samples yielded up all their fat in the 3 to 4 hours.—D. A. L.

Improvements in Sampling and Testing Apparatus for Spirituous Liquors or other Liquids. J. O'Neil Mackie, Liverpool. Eng. Pat. 12,585, September 19, 1884.

THIS improvement consists essentially of a glass cylinder fitted with a valve at bottom opening inwards, acting

automatically or by hand, so that an average sample or a sample at any required depth may be taken from a cask or vessel containing the liquid. The cylinder carries inside a hydrometer, inside which is a thermometer, the means for ascertaining the specific gravity and the temperature of the sample being thus comprised in the sampling instrument.—G. H. B.

An Improved Method of and Apparatus for the Quantitative Estimation of Hemoglobin in the Blood. A. M. Clark, Middlesex. From Dr. E. Fleissch, Vienna. Eng. Pat. 5991, May 15, 1885.

THE method consists in comparing the depth of colour of a solution of the blood in water with a standard made of ruby glass ground into a wedge-shape and fixed in a form of chlorimeter, which admits of the thickness of the wedge at any point being read off on a scale. In order to provide the same tone of colour being transmitted through the ruby glass and the blood, the yellow light of a lamp or candle is used for the illuminant.—G. H. B.

Test for Chloralhydrate. M. Hirschfeld. Archiv d. Pharm. 1885, 223, 26.

By adding to a solution of chloralhydrate a small quantity of calcium hydrosulphide, a red colouration ensues after the lapse of about half-a-minute. A fainter but still clearly perceptible reaction takes place when a solution of sulphuretted hydrogen and lime water are added to a chloralhydrate solution.—F. M.

A New Reagent for Aromatic Orthodiamines. O. Hinsberg. Ber. 18, 1228.

FOR the detection of small quantities of *m-p*-toluylene-diamine and *o*-phenylenediamine the author found phenanthrene-quinone a very suitable reagent. The reaction depends upon the formation of diphenylene quinoxalines, which are only slightly soluble. An alcoholic solution of the diamine to be tested is boiled for a short time with a solution of phenanthrene-quinone in glacial acetic acid. If an orthodiamine be present, a bulky precipitate, consisting of fine yellow needles, is formed while the liquor is still boiling. On separating it by filtration and moistening it with hydrochloric acid it turns deep-red. The paradiamines form a similar compound with phenanthrene quinone, but it is not acted upon by hydrochloric acid. The author thinks that this reaction may probably be generally suited for the detection of aromatic orthodiamines.—S. H.

New Books.

ALKALI, ETC., WORKS REGULATION ACT, 1881. Twenty-first Annual Report on Alkali, etc., Works. By the CHIEF INSPECTOR. Proceedings during the Year 1884. London: Printed by Eyre & Spottiswoode, East Harding Street, Fleet Street. 1885. Price 6d.

THIS Government Blue Book, just recently issued, contains the Chief Inspector's Annual Report to the Local Government Board for the year 1884. It contains in all 91 pages of matter, preceded by a table of contents arranged as follows:—Introduction; Alteration of Districts; Arrangement of Districts; Location of Inspectors; Wool Carbonising Works; Venetian Red Works; Manure Works; Deposit of Alkali Waste; Bleaching Powder Chambers; Apparatus for Testing the Air of the Chambers; Proposed Rule for Bleaching Powder Makers; Provisional Orders; Prosecution under the Act; Inspectors' Reports—the districts reported being numbered and named as follows:—District No. 1. Scotland and Ireland; No. 2. North; No. 3. Cheshire, North

Wales, and part of Lancashire; No. 4. East Lancashire and Yorkshire; No. 5. Midland; No. 6. South West; No. 7. South East, District of Widnes. From the Report it would appear that sulphate of ammonia works are being gradually but surely made innocuous through the persevering efforts of the Chief Inspector and his colleagues. In no case is sulphuretted hydrogen now allowed to escape mingled with carbonic acid from the sulphate tanks as of old, and the turning the gases into boiler-flues or the after-parts of fire-places at best only a process of conversion of one form of nuisance into another, is also being rapidly discontinued in favour of the direct condensation of the sulphuretted hydrogen in oxide of iron purifiers, by which the sulphur can be readily recovered and the oxide of iron regenerated for renewed use. (See pages 48, 49, 59, and 72, *loc. cit.*).

A TREATISE ON THE MANUFACTURE OF SOAP AND CANDLES, LUBRICANTS AND GLYCERIN. By WM. LANT CARPENTER, B.A., B.Sc., etc. With 87 illustrations. E. & F. N. Spon, 125 Strand, London. New York: 35 Murray Street. 1885.

This work, as the preface informs us, has in part appeared, though in a detailed manner, in Spon's "Encyclopædia of Manufactures and Raw Materials." In the present work the whole subject matter is rearranged and very carefully revised. The book contains 332 pages of subject matter, illustrated with 87 woodcuts, a table of contents, and an alphabetical index covering 12 pages. It is of medium 8vo size, and is bound in cloth. The work is subdivided into fifteen chapters treating of the various portions of the subject, these chapters being preceded by a "Historical Epitome and References." The writer of the present notice has himself seen and examined the remains of the old Pompeian soap factory referred to, with its lead-lined pans, each containing about 15 to 20 gallons. It forms one of the most interesting relics in the ruined city. He can thus bear full testimony to this interesting fact mentioned in Mr. Carpenter's "Historical Epitome." Chapter I. Theoretical Principles. Chapter II. Raw Materials: Their Sources and Preparation. Chapter III. Raw Materials: Refining, Clarifying and Bleaching. Chapter IV. Raw Materials: Their Proximate Analysis. Chapter V. Caustic Alkali, and other Mineral Salts. Chapter VI. Manufacture of Household Soaps: The Process of Saponification. Chapter VII. Treatment of Soap after its Removal from the Soap Copper: Household, Manufacturers', and Toilet Soaps. Chapter VIII. Theory of the Action of Soap—Its Valuation and Analysis: Distribution and Position of the Trade. Chapter IX. Lubricating Oils, Railway and Waggon Grease, etc. Chapter X. Candles: Raw Materials, their Sources and Preliminary Treatment. Chapter XI. Processes for the Conversion of Neutral Fats into Fatty Acids: The Manufacture of Commercial Stearin. Chapter XII. The Manufacture of Candles and Night-lights: Their values as Illuminants. Chapter XIII. Glycerin. Chapter XIV. Summary of Patents. Chapter XV. Bibliography.

Monthly Patent List.

ENGLISH APPLICATIONS.

1885.

I.—GENERAL PLANT, APPARATUS, AND MACHINERY.

8710 G. H. Raven, London. Improvements in or relating to smoke-consuming furnaces or fire-places. July 20
8800 J. Jarvis, London. Improvements in retorts and seals therefor. Complete specification. July 22

8970 A. C. Hill, Middlesbrough. Improvements in regenerative hot-blast stoves for heating air, steam, or other gases. July 25

9201 D. K. Clark and W. J. E. Foakes, London. Improvements in filter-presses. July 31

9225 W. Weldon, Burston—Communicated by A. R. Pechiney et Cie., France. Improvements in apparatus for heating solid substances out of contact with the products of the combustion of the fuel employed. August 1

9231 H. W. Todd, Liverpool. Improvements in metallic drums for containing chemical and other substances. Aug. 1

9275 J. Ruscoe, Manchester. Improvements in machines for facing the ends of, and turning or boring gas-retort mouths, lids, pipes, or valves of D, oval, or any other shape or section than round; also for cutting oval-shaped holes in boiler and other plates, castings, and the like. August 1

9298 A. H. W. Brown, London. Improvements in means for economising fuel and consuming smoke in steam boilers. August 4

9316 W. L. Wise, London—Communicated by J. G. Hansel and F. L. Krumblegel, Saxony. Improvements in furnaces. August 4

9338 W. A. Martin, London. An improved mode of developing and increasing the draught of furnaces. August 5

9387 W. Thomlinson, London. Improvements in stoves for heating the blast for blast furnaces, or for other analogous purposes requiring hot blast. August 6

9416 J. G. Betts, London. Improvements in apparatus for heating or cooling air for drying or for other purposes. August 7

9437 W. W. Nightingale, London. Improvements in means or apparatus for forming and maintaining ice surfaces, and treating the atmosphere of glaciers or such like places, and for cooling chambers. August 7

9446 W. G. Hudson and C. H. Bonne, Manchester. An improved apparatus for carburetting atmospheric air and other gases. August 8

II.—FUEL, GAS, AND LIGHT.

8669 F. Siemens, London. An improvement in gas-producers. July 17

8745 S. A. Sadler, London. Improvements in means and apparatus for utilising mineral, tar, and other oils as fuel. July 20

8816 P. Jensen, London—Communicated by J. E. Dery, Belgium. Improvements in or in connection with apparatus for the carburation of gas in railway and other carriage lamps and lanterns. Complete specification. July 21

8880 J. Hanson, Bingley. Improvements in the construction or arrangement of hydraulic mains and ascension pipes, connected therewith for the manufacture of coal gas. July 23

8892 J. Bromilow, Liverpool. Improvements in apparatus for the application of gases to metallurgical and other purposes requiring high temperatures. July 23

9089 F. L. Harris, London. Improvements in gas batteries for the production of electric currents. July 28

9203 J. Robbins, London. An improved artificial fuel. July 31

9302 A. R. Upward and C. W. Pridham, London. Improvements in gas batteries. August 4

9365 H. Baker, Derby. Lighting by coal gas, houses, streets, etc., by which a much greater lighting power is obtained from the gas. August 6

9511 R. Dempster, Jun., Manchester. Improvements in centre valves employed in connection with gas purifiers. Complete specification. August 11

9513 H. E. A. Wallis and H. T. Ratcliff, London. An improved arrangement or means for effecting direct conduction of gas-flame heat to hydrocarbon for enriching the flame and increasing light. August 11

9591 J. McCulloch and W. Black, Glasgow. Improvements in machinery for preparing and compressing materials for use as fuel or for smelting purposes. August 12

9650 H. E. A. Wallis and H. T. Ratcliff, London. Improved construction of carburetting apparatus for burning coal gas with hydrocarbons. August 13

9679 H. J. Rogers, Watford. Improvements in gas retorts, and in apparatus connected therewith. August 14

9701 N. J. Holmes, Sevenoaks. Improvements in the construction of self-igniting and inextinguishable signal lights for marine and other purposes. August 14

9720 B. Andreac, Halifax. Improvements in the generation of gas for light and heat purposes, and the necessary apparatus thereto. August 15

9725 R. W. Anderson, Liverpool. A new and improved means of economising coal, consuming smoke, and raising the heat to a higher degree in the furnaces of steam boilers. August 15

9761 J. J. Barclay and J. Thompson, London. Improvements in gas producers and apparatus for supplying gas to marine and stationary steam-boiler and other furnaces. August 17

III.—DESTRUCTIVE DISTILLATION, TAR PRODUCTS, ETC.

8973 L. Mond, Liverpool. Improvements in or incidental to the separation of ammoniacal products and tar from producer or other furnace gases. July 25

9110 H. de Solderhoff, London. A continuous arrangement of regenerating apparatus for coke-ovens. July 29